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Group 2736

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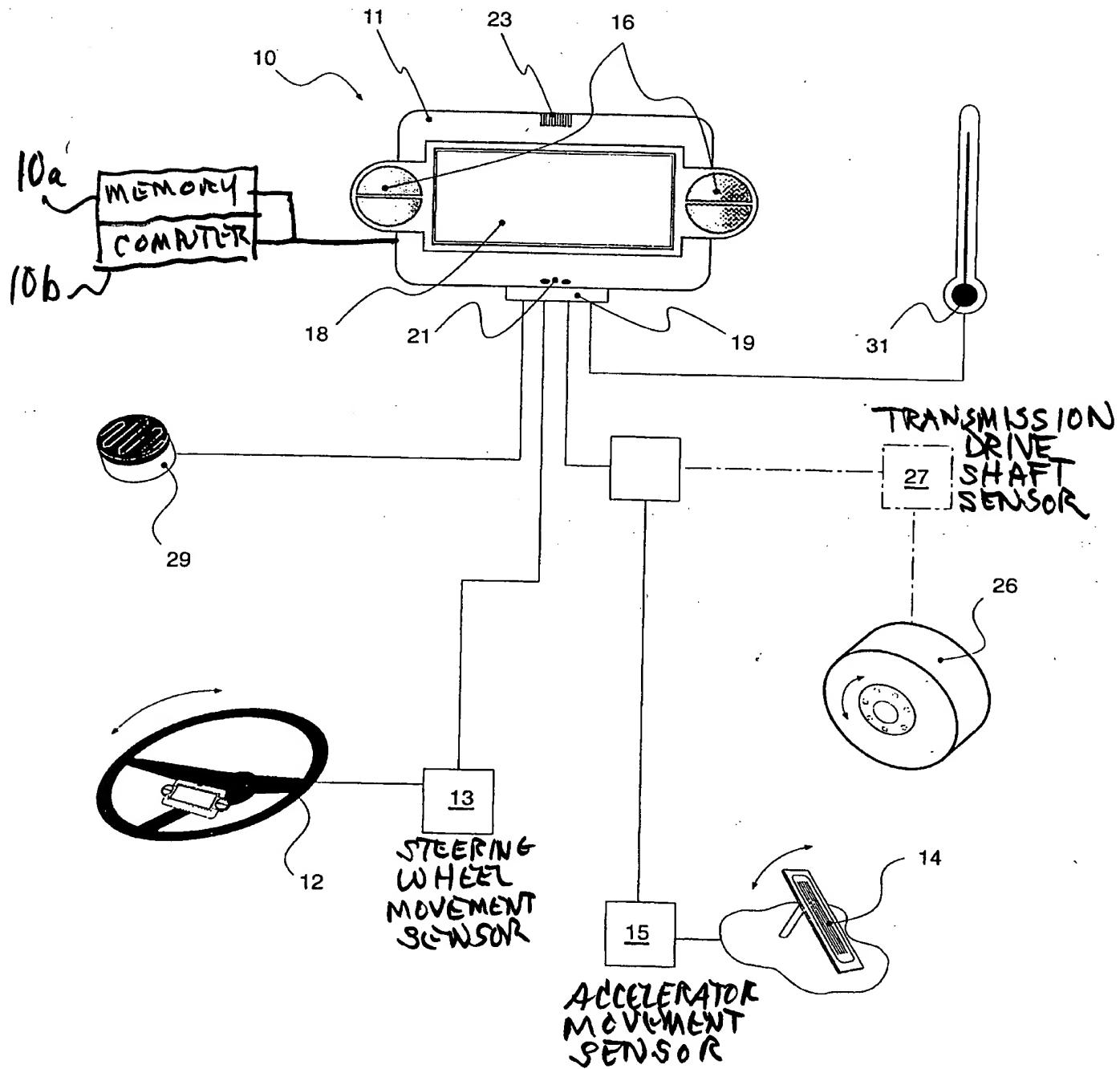


Figure 1

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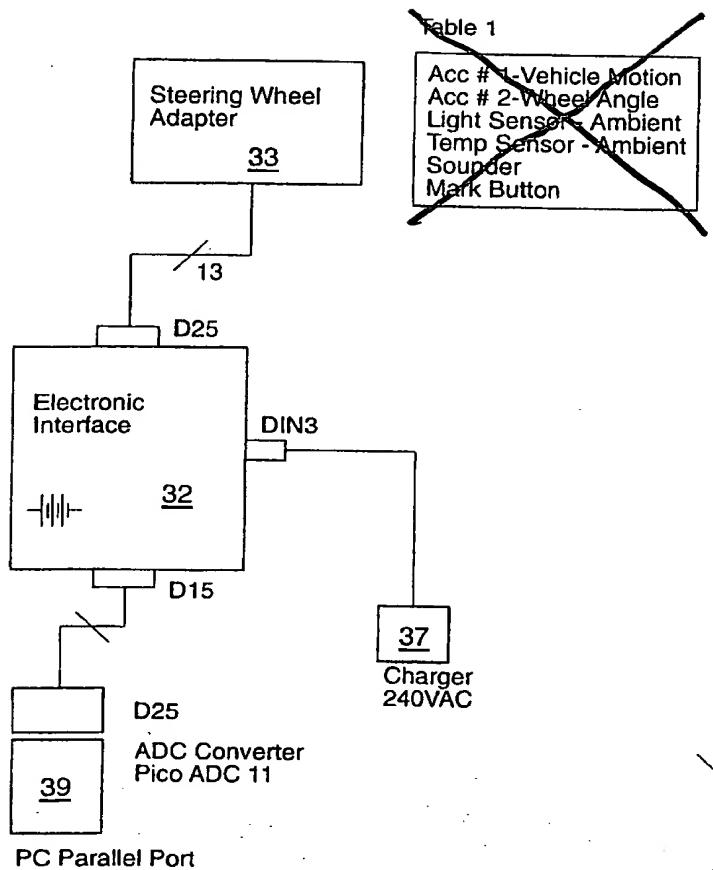
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Figure 10

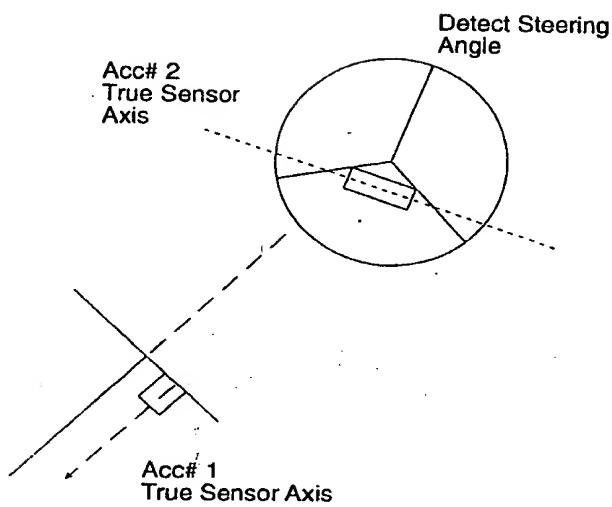


Figure 11

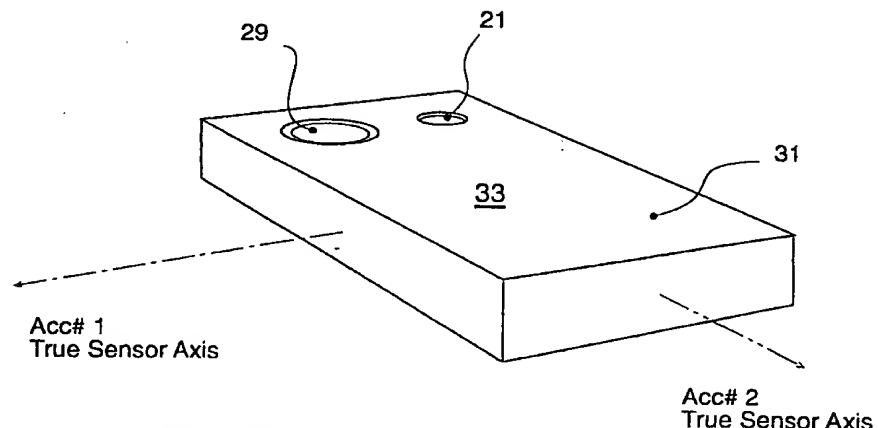


Figure 12

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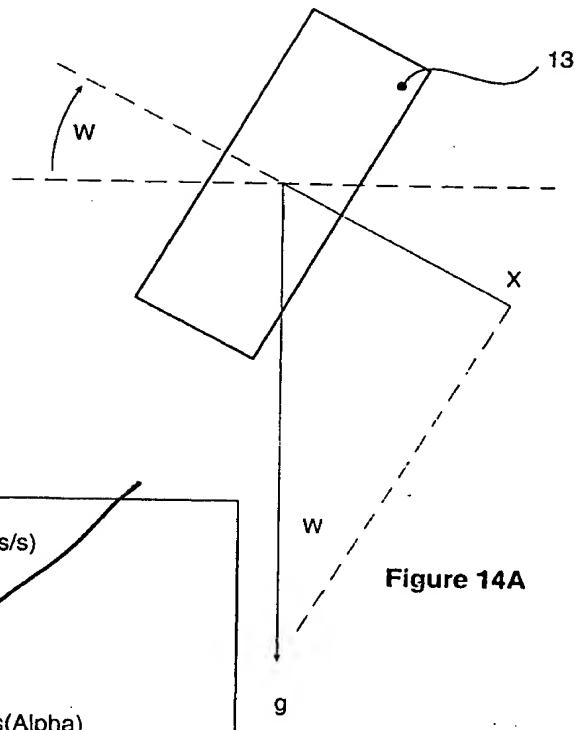
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Figure 14A

Table 2

W - Wheel Rotation Angle
X - Measured component of g in sensor axis (m/s/s)
K wheel - Sensor scaling factor (mm/s/s/bit)
g - Gravity 9.81 m/s/s
g - Gravity Vector Component in wheel Plane
$\sin W = X / g$
$X = k_{wheel} / 1000 \times (\text{Ch}(1) - \text{ZeroWheel}) \times 1/\cos(\alpha)$
$\sin W = k_{wheel} / (1000 \times g) \times (\text{Ch}(1) - \text{ZeroWheel}) \times 1/\cos(\alpha)$
$W + \text{ArcSin} [k_{wheel} / (1000 \times g) \times (\text{Ch}(1) - \text{ZeroWheel}) \times 1/\cos(\alpha)]$

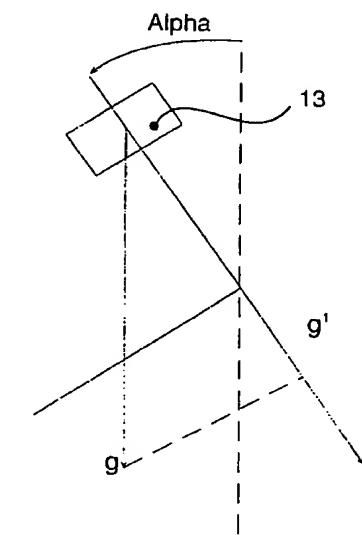


Figure 14B

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Raw ADC Ch(1)

RawWheel[n](bit)

1023

0

Figure 15A

ZeroWheel (bit)

Engineering Corrected
Steering deviation angle

Wheel[n](Deg)

W Limit+

0

W Limit-

Figure 15B

Steering = 'Active'

Steering = 'Corrective'

Steering = 'Active'

Zero X Count-Z (# / min)

Figure 15C

T Monitor

Table 3

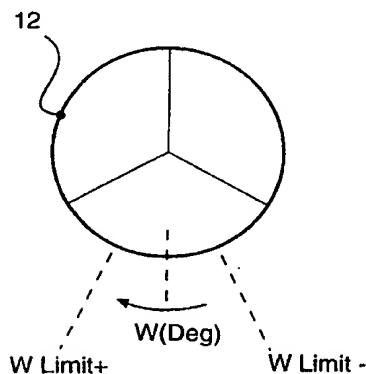
$$\text{RMS Steering Angle - } R(\text{Deg}) = \sqrt{\frac{\sum \text{Wheel}[n]^2}{n}}$$

Table 4

Bound Check

$$\begin{aligned} W \text{ Limit-} < W < W \text{ Limit+} \\ W < W \text{ Limit-} \\ W > W \text{ Limit+} \end{aligned}$$

Steering Mode=Corrective
Steering Mode=Active
Steering Mode=Active

**Figure 15D**

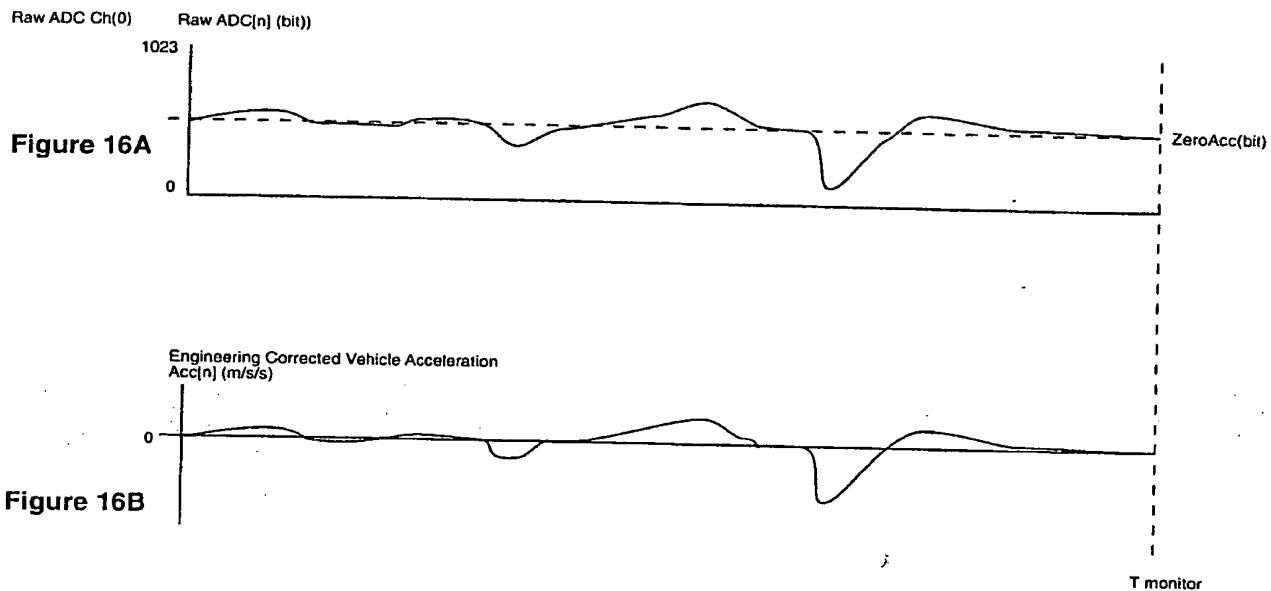


Table 5

$$\text{RMS Vehicle Acceleration } g(\text{m/s/s}) = \sqrt{\frac{\sum \text{Acc}[n]^2}{n}}$$

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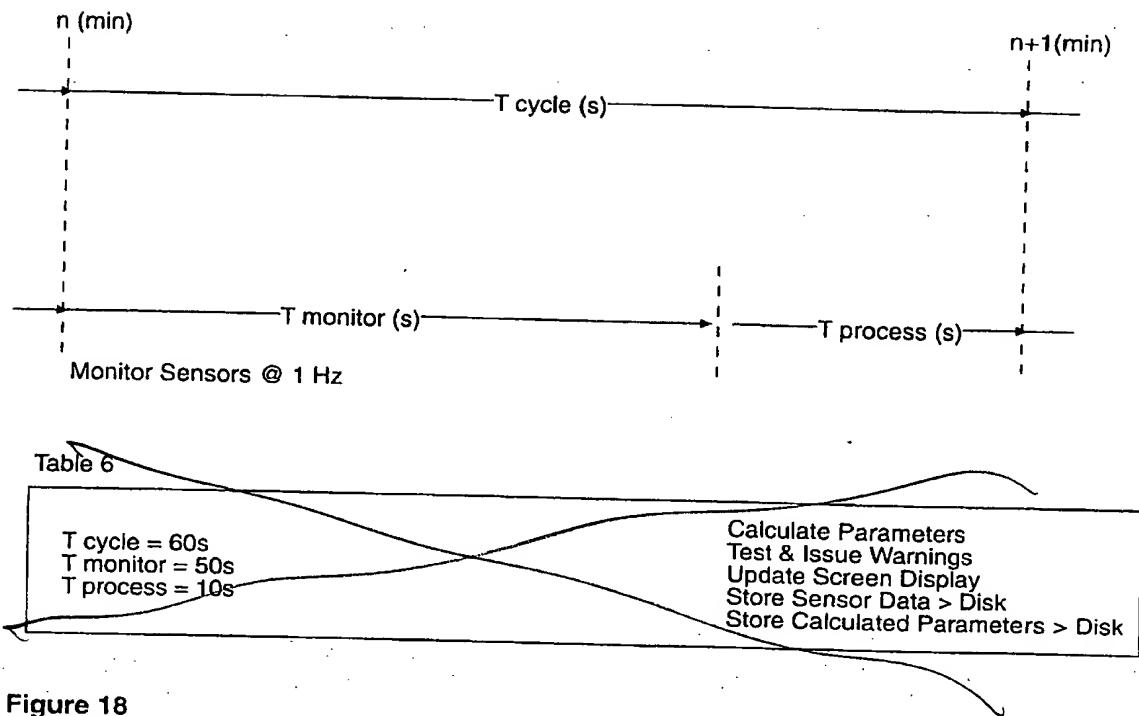
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Figure 18

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Figure 19

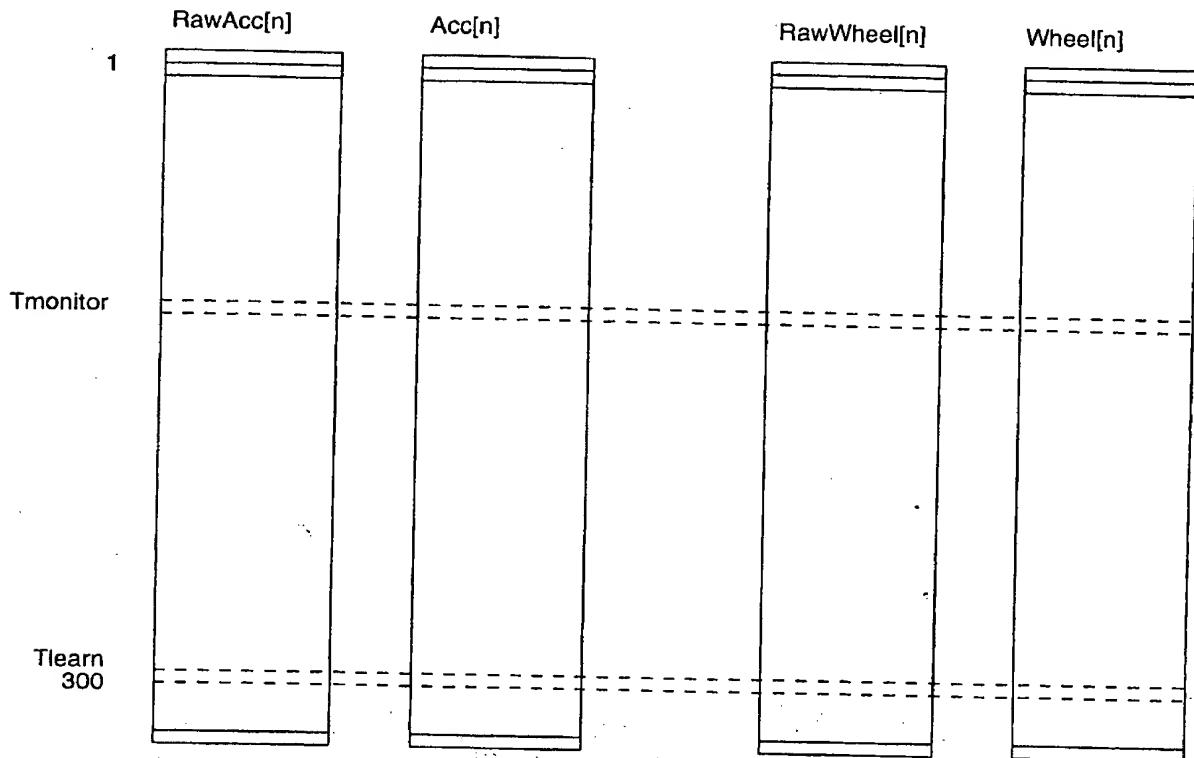


Table 7

Note:

~~Data storage @ 1Hz~~
~~ZeroAcc=Average {RawAcc[n]}~~
~~ZeroWheel=Average {RawWheel[n]}~~
~~Ch(N)=Raw ADC Value (bit)~~

Table 8

$$\text{Acc}[n] = K_{\text{acc}}/1000 \times (\text{RawAcc}[n] - \text{ZeroAcc}) \times 1/\text{Cos}(\text{Alpha})$$

(m/s/s) (mm/s/s/bit) (bit) (bit)

$$\text{Wheel}[n] = \text{ArcSin} [K_{\text{wheel}}/(1000 \times 9.81) \times (\text{RawWheel}[n] - \text{ZeroWheel}) \times 1/\text{Cos}(\text{Alpha})]$$

(Deg) (mm/s/s/bit) (bit) (bit)

$$I = K_{\text{light}}/1000 \times (\text{Ch}(2) - \text{ZeroLight})$$

(KLx) (Lx/bit) (bit) (bit)

$$T = K_{\text{temp}}/1000 \times (\text{Ch}(3) - \text{ZeroTemp})$$

(DegC) (mDegC/bit) (bit) (bit)

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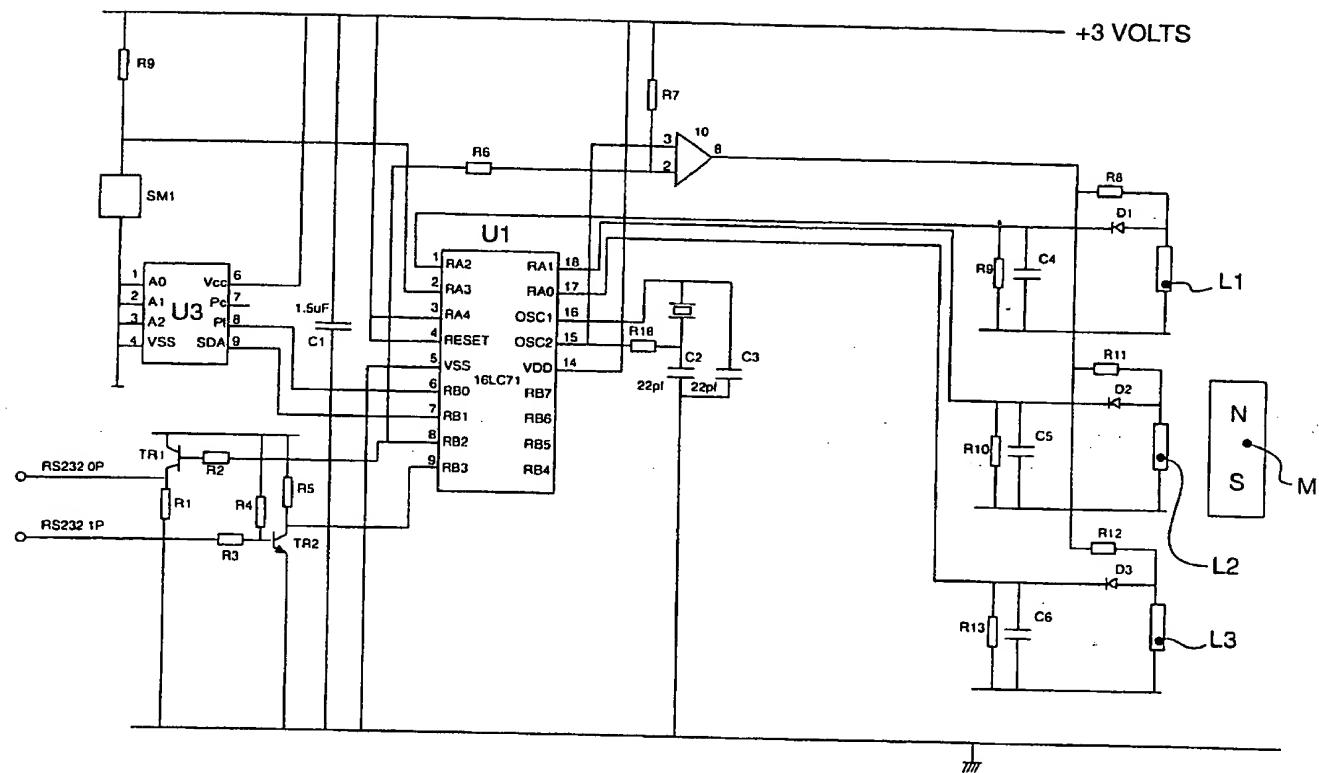
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Figure 20